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FOREST INSECT PROBLEMS OF THE PACIFIC SLOPE°

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Until very recently only fire protection was given serious consideration whenever forest protection matters were under discussion. The term forest protection meant protection against fire and only fire. Gradually, however, there has been an awakening, and today many of the owners of timberland on the Pacific Coast are convinced that at least in the pine stands, the Dendroctonus beetle menace is as great, if not greater, than the hazard of forest destruction by fire. This awakening has come because of the gradual increase in value of the remaining timber and the resultant more careful attention which is given its protection. The damage caused by the always spectacular forest fire is easy for everyone to see and understand, but many observant foresters and even observant entomologists fail to recognize the slower and yet more insidious losses which the bark-beetles bring about in our forests. The Forest Service has long realized the necessity for forest insect control but thus far the funds for such work on the National Forests have been inadequate.

For more than thirty years the federal Bureau of Entomology has investigated the character and extent of the damage caused by the Dendroctonus beetles to the forests of this country. The life histories of these tree-killing beetles have been worked out and methods of control have been developed by the Bureau which are of proven efficacy. The application of these control methods again and again has resulted in the protection of timber at a cost far within the limits of good business practise. Equipped with a knowledge of these control methods, both private and government agencies are now in a position to effectively protect privately and federally owned forests against bark beetle depredations if the necessary funds are at hand.

In British Columbia, Washington, Oregon and California the forest insect problem is most acute in the pine stands. Other species of trees are by no means immune but in the Pacific Coast region the destruction to the pine timber far over shadows the insect loss prevailing in the other tree species. The major pine species involved in the Pacific Slope insect depredations are, in order of their importance: western yellow pine,(1)

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(1) Western yellow pine - Pinus ponderosa
Sugar pine - Pinus lambertiana
Western white pine - Pinus monticola
Lodgepole pine - Pinus contorta

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sugar pine, western white pine and lodgepole pine. Only two species of Dendroctonus are of primary importance in the wholesale killing of these four species of pine; namely, the western pine beetle (Dendroctonus brevicomis Lec.) and the mountain pine beetle (Dendroctonus monticolae Hopk.) The western pine beetle infests only the western yellow pine while the mountain pine beetle kills with equal ease the four species of pine we have enumerated. Nevertheless the volume of western yellow pine killed in this region by brevicomis undoubtedly exceeds the total monticolae depredations in all the four species of pine under discussion.

Ordinarily one finds only relatively unimportant evidences of the activity of these two species of Dendroctonus in our yellow pine, sugar pine, white pine and lodgepole forests. Small and scattered attacks of this type are known as normal infestations and in the present intensity of forest protection no control work is done on such infestations. However, they should be carefully watched for any evidences of increase in the severity of the attacks. Occasionally the killing of trees by these two Dendroctonus beetles proceeds at an alarming rate and in such cases the prompt destruction of the beetles in the infested trees must be undertaken. These concentrated and heavy attacks are called epidemic infestations. Since existing epidemics have their origin in normal or endemic situations, it is not at all improbable that eventually, when forest protection becomes more intensive, the so-called normal infestation will come in for its share of control work.

It has been demonstrated that the safe control of epidemics is not a one year or even a two or three year matter. It is true that the effort is made to help the natural forces to break the force of the infestation by large scale control operations in the first year or two, but it is just as important that this initial control work be followed up by a certain amount of so-called maintenance work year after year. This maintenance work is inexpensive and serves to prevent the recurrence of the epidemic conditions. As our pine stands become more and more valuable, they will be divided into control units and a definite permanent plan of insect control will be worked out for each unit. In the Sierra National Forest, in California the Bureau of Entomology already has such a plan well under way, and in other parts of the Pacific Slope the initial outlining of control units of both private and government pine forests has already been completed.

Perhaps a single instance of the tremendous loss which the western pine beetle (Dendroctonus brevicomis) can inflict on the yellow pine of this region will suffice. One of the finest bodies of western yellow pine in the West is

located in southern Oregon in the vicinity of Klamath Falls. It is a privately owned body of timber covering an acreage of about 600,000 acres and a volume of at least ten billion feet. Thirty million dollars is a conservative valuation of this property. During the past ten years the forest fire loss on this area amounted to only $15,000 because of the efficacy of the fire protection plan. During this same ten year period there has been a $5,000,000 loss for which the western pine beetle has been entirely responsible. In other words, during the last ten years the western pine beetle has killed ten per cent of the stand. This killing is still going on. A few of the private owners have attempted to control the beetle on their own lands but their work was futile because of the indifference of the owners of neighboring timber. Oregon has recently put a compulsory forest insect control law on its statute books and so the way has been paved to force the indifferent and careless timber owner into line. This particular body of privately owned yellow pine timber is surrounded by federally owned forests which are infested to the same degree as the private timber. As a consequence an effective control campaign must provide for the reduction of the beetle on the private and government lands simultaneously. An emergency appropriation bill has recently been introduced in both Houses of Congress which provides for the appropriation of the $150,000 which is deemed necessary for the wiping out of the beetle menace on the federal lands.

In British Columbia, the Dendroctonus infestations are being fought on a large scale on provincial, crown and grant lands. The timber owners of Oregon and California are becoming fully alert to the beetle danger. And it is probable that within the next few years, Congress will provide more money to enable those responsible for the protection of federal timber to fight the Dendroctonus epidemics in co-operation with the private owners. In the meantime, the splendid investigative work of the Bureau of Entomology on these forest insect problems must be financed on a better basis. Its handful of forest entomologists in the West have had the three-fold responsibility of giving advice in the field to timber owners and government officers, carrying on insect surveys over large areas and keeping under way their investigative work. Improvements in control methods are being developed constantly at the Bureau's western experiment stations under the direction of Dr. A. D. Hopkins. These improvements mean cheaper protection and the investigative work which yields them should not be sacrificed. There is a real need for the study of forest insect problems by the state experiment stations. With the rapidly growing demand by the forest industry for advice on forest insect control, the necessity for the enlargement of the Bureau's personnel of forest entomologists and the need for the attention of the state experiment stations to the many still unsettled phases of the forest insect problem are already at hand.

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